



## **Addressing Ethnic Inequalities In Medicine Use In Denmark**

### **Selected TheoryBased Interventions**

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## Review

# ADDRESSING ETHNIC INEQUALITIES IN MEDICINE USE IN DENMARK: SELECTED THEORY-BASED INTERVENTIONS

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## ABSTRACT

**Objectives:** We share the experiences gathered and lessons learnt in medicine use by ethnic minorities by the Section for Social and Clinical Pharmacy-Copenhagen University (SCP-KU) research group, and provide an overview of theory-based interventions conducted for and with ethnic minorities.

**Methodology:** We conducted a review of the scientific and grey literature on ethnic minorities and their access to and use of medicines. Because the aim was to share the

philosophy behind the work of SCP-KU (based on inclusion of the user's perspective and the use of theory), only studies conducted with that orientation were selected.

**Results:** A total of 24 studies were selected and analysed. The following successful practices were identified: (i) building trust between the pharmacist and the user/patient; (ii) involving ethnic minorities in all phases of the intervention (design, implementation and follow-up); (iii) developing an ethnically sensitive culture among pharmacists based on

openness, curiosity and respect; and (iv) when possible, involving family, friends and the close social network of the patient, especially when there is a need for behaviour change related to medicine use or lifestyle habits.

**Conclusions:** Shaping ethnically sensitive pharmacy-related services requires the involvement and empowerment of ethnic minorities in all phases of the intervention research. Caution is needed when classifying social groups based on migrant and ethnic premises.

**Keywords:** DENMARK, ETHNIC MINORITIES, INTERVENTION STUDIES THEORY, MEDICINE USE, MIGRANT, PHARMACY PRACTICE

## INTRODUCTION

Pharmaceutical products (commonly known as medicines or drugs) are the most frequently used medical technology, and their consumption is on the rise worldwide (1). The health and societal benefits of treatment with medicines are well known. However, there are still many challenges that deserve the careful attention of all policy- and decision-makers. These challenges include issues related to access to appropriate treatment, self-medication/self-management and medicine-related problems (MRPs), to name a few. These challenges are often magnified among particular ethnic and migrant populations. Non-structural barriers to health care, such as language, cultural differences and unmet expectations, play a crucial role in the way migrants and ethnic minorities access and use medicines.

Patients from ethnic minorities (including migrants, asylum seekers, refugees and descendants of migrants) typically suffer from more diseases than those from the ethnic majority, take more medication and for a longer period of time, and suffer from more MRPs (2–4). Medicine-use behaviour is strongly influenced by the habits acquired in the country of origin, where there may be a lack of or a lax health-care regulation system, which allows for more frequent and indiscriminate use of over-the-counter medications (5). The psychosocial stressors experienced during the migration process and the early years of residence in the host country also influence medicine-use behaviour. Indeed, studies show that medicines can be used as tools to cope with stress resulting from alienation, discrimination and racism (6). Finally, using both imported medicines and traditional remedies, and

sharing prescribed medications increase the risk of side-effects due to drug interactions and MRPs (7, 8).

In the Nordic countries, where access to health care is universal and the cost of medicines is reimbursed to a large extent, structural barriers that hinder access to medicines among the migrant population are not a major public health issue (2). Moreover, most of the Nordic countries have traditionally had high-quality integration policies, which provide socioeconomic support to families ranging from health, education and residence benefits to work subsidies. However, one might expect problems in the future in some Nordic countries, for example in Denmark, where the non-friendly political rhetoric towards migrants and the highly restrictive migration policy can have ripple effects on migrants' health (9).

## RESEARCH ON ETHNICITY AND MIGRATION: A VITAL PART OF THE USER PERSPECTIVE

Addressing ethnic equity in quality of care and treatment is a challenge for policy-makers and concerned health-care professionals. Health systems especially need to be ethnically sensitive and take into account cultural diversities (10, 11). Policies and interventions are rarely successful unless the user perspective is acknowledged and understood, and the

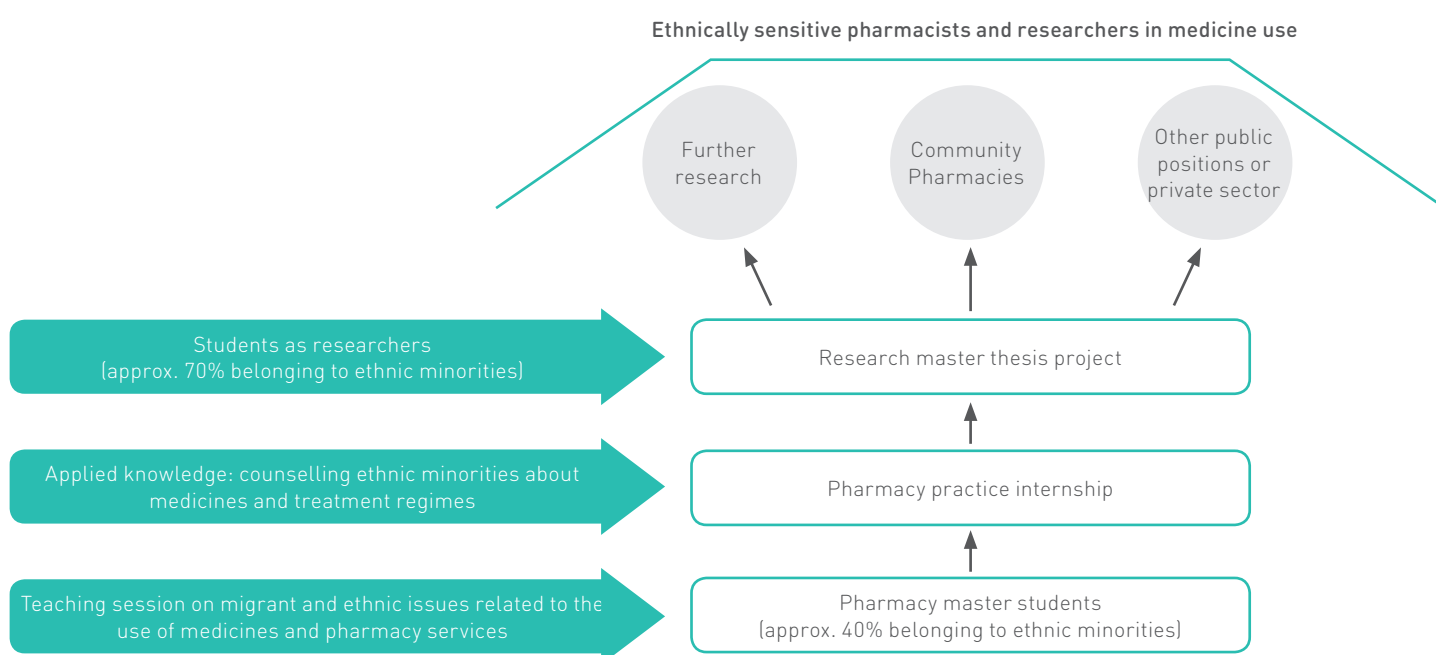
voices of patients from ethnic minorities are listened to and taken into consideration.

## User perspectives, theory foundation and qualitative methods

For almost four decades, the Section for Social and Clinical Pharmacy, University of Copenhagen (SCP-KU) has focused its research and teaching on the role of medicines in society, comprising three essential ingredients: theory-based research; a primary use of qualitative methods; and a central focus on the user perspective. Multidisciplinary groups consisting of pharmacists and social scientists have addressed a variety of issues concerning medicine's role in society, particularly access to medicines and the goals of rational use of medicines. Early on, this research identified a huge gap between how rational use of medicines was understood by the health-care system and health-care professionals and by patients (or citizens or users) (12).

Theory has always played an important part in this research – based on the belief that in addition to providing structure for study design and data analysis (thus increasing transparency), applying theory helps in interpreting and explaining practices, events and patterns occurring in the world of pharmacy, and in understanding the behaviour and practices of patients.

**FIG 1. INTEGRATING THE MIGRANT AND ETHNIC MINORITY PERSPECTIVE FOR FUTURE PHARMACISTS AND RESEARCHERS IN MEDICINE USE.**



Examples of theories used in this research include theories of risk perception, risk communication, policy, social stigma, ethnicity and race, communication, medication behaviour and interdisciplinary cooperation (13).

The use of qualitative methods permits a dialogue between researcher and patient where the goal is to give the patient a voice. These methods include observations, interviews and focus groups and, more recently, intervention studies.

Focusing on the user perspective provides insights into how medicines are perceived differently by lay people than by experts – including something as basic as how patients define medicines (14, 15), their knowledge of medicines and their risk perceptions (16). The relative growth of ethnic minorities in Denmark has added culture as a new and necessary dimension to the misunderstandings that are already common among lay people with regard to access to and compliance with medication. It would be natural to include migrant and ethnic differences as a necessary part of the patient perspective for research and teaching. Since 2008, we have taught more than 1300 pharmacy students on ethnic minorities and medicine use in the pharmacy internship courses. Figure 1 shows how SCP-KU has integrated migrant and ethnic issues into its teaching and research to contribute to the creation of an ethnically sensitive body of pharmacists and researchers on medicine use.

## AIMS

The proposed agenda for action included in the WHO Regional Office for Europe outcome document of the High-level Meeting on Refugee and Migrant Health held in Rome in November 2015 highlights that:

*[t]he effective provision of health care, health promotion and preventive measures requires health systems that can adapt and respond to the needs of a changing population and take account of cultural, religious, linguistic and gender diversity. Training of health professionals and relevant non-health actors is a key element to achieve this purpose.*

Moreover, this document further states that “appropriate measures should be taken to promote continuity and quality of care for migrants ... and equal quality standards of care defined, delivered and

monitored” (11). Therefore, in this review, we aim to share the lessons learnt and best practices gathered by the SCP-KU research group by providing an overview of the empirical and theory-based intervention studies conducted in the field of ethnic minorities and medicines, with the final goal of serving as an inspiration to researchers, practitioners and policy-/decision-makers in shaping ethnically sensitive pharmacy-related services.

## METHODS

### SETTING

Health care in Denmark reflects the Nordic welfare model. The Danish health-care system is tax-financed and provides free access (i.e. no payment) to hospitals and general practices (17). There is progressive reimbursement for prescribed medications (a need-dependent reimbursement system): the more expenses one has for prescribed medicines, the more reimbursement one will receive. In addition, municipalities may cover part of the expenses of chronic disease-related medication once the public reimbursement has been deducted (e.g. due to low income and large drug consumption). The health authorities determine the number of pharmacies and branch pharmacies as well as their locations.

### DATA SOURCES AND INCLUSION CRITERIA

For this review, we included scientific articles and reports that focused on research on ethnic minorities and migrants legally residing in the country, and their access to and use of medicines (but not access to broader medical services), with the aim of identifying inequalities or/and developing theory-based interventions to reduce MRPs. All scientific articles were written in English. However, some reports that were originally written in the Danish language were included. Studies were included if they were conducted during the past 15 years. Short communications, conference proceedings, posters and teaching materials were not included. In total, we included 10 qualitative studies (4, 5, 18–25), 9 quantitative studies (26–34) and 5 intervention studies (35–39) in this review. Because the goal of this review was to share the philosophy of the work being done at SCP-KU based on the characteristics described above (the user’s

perspective and use of theory), we selected only those studies conducted with that orientation.

The methodological approaches of the included studies were varied because they were selected based on the nature of the research question in each study. In the qualitative studies included, primarily semistructured interviews were used alone or in combination with medicine reviews (4, 5, 19, 22, 25). Other qualitative methods used were focus groups, observations and minutes from meetings (20, 21). The study designs of the quantitative studies included cohort (32–34) and cross-sectional studies (27–31). The two systematic reviews included in Table 1 followed the PRISMA guidelines (40). The data sources for the quantitative studies were registers and population-based surveys. Finally, the theory-based intervention studies combined different methods, including individual interviews, focus groups, medicine reviews, test–retest, and process and outcomes evaluations (35–39). For the intervention studies especially, the interviews and medicine reviews were often conducted by pharmacists with the same ethnic background and/or a researcher who could speak the same language as the participants.

## ANALYSIS

Data extraction and analysis took into account the main priorities of the special issue on migration of the WHO Regional Office for Europe journal *Public Health Panorama*. Key messages on equity, innovative solutions, successful practices and lessons learnt were therefore the characteristics according to which the data were organized. All three authors read the studies and worked collectively to identify and select the main best practices.

## ETHICAL CONSIDERATIONS OF THE SELECTED STUDIES

According to Danish law, no ethical approval was needed for these studies as they do not involve human subjects or human biological material such as tissue, ova or cells. However, specific measures were taken for the different types of studies and these are mentioned in each study.

# RESULTS

## STUDY CHARACTERISTICS

Tables 1, 2 and 3 present the characteristics of the 24 selected qualitative, quantitative and intervention studies, respectively, included in this review (4, 5, 18–39). The non-Western ethnic minority groups included in the studies were Turkish (5, 24, 28, 29, 31–39), Iranian (20, 22, 24, 28, 29, 39), Iraqi (5, 24, 28, 29, 31–34), Pakistani (21, 25, 28, 29, 32, 34, 36) and Lebanese (mostly Palestinian) (5, 28, 29, 31, 33). These ethnic groups are the most common ones living in Denmark (<http://www.statbank.dk/statbank5a/default.asp?w=1366>). With the exception of neonates, all age groups were addressed in the 24 studies. The sample covered a 16-year period (2000–2016).

A total of seven studies mainly aimed to identify inequalities in medication use (24, 28, 29, 31–34), three studies focused on investigating how ethnic minorities perceive pharmacy services (19, 21, 27), and most of the qualitative studies attempted to understand the dynamics taking place in encounters between ethnic minority customers and pharmacists and/or pharmacy assistants working in community pharmacies. Three studies analysed the complex issue of categorizing, defining and grouping ethnic minorities, and the implications for accurately identifying risk factors related to medicine use (18, 20, 28). Five research-based intervention studies focused on reducing MRPs among ethnic minorities (26, 35–38). Other issues examined and explored in randomized controlled trials for asthma medication included the presence of ethnic minority groups (24), the use of traditional medicines (25) and the effect of living in the host country versus the home country (22). Table 4 summarizes the key messages from each study on equity, successful practices and innovative solutions identified.

TABLE 1. CHARACTERISTICS OF THE SELECTED QUALITATIVE STUDIES AND PROJECTS

No.	Year	Authors	Aim	Location	Study design	Data collection date	Ethnic and migrant groups	Age range	Sex	Key messages
1	2003	Bissell et al.	To raise the profile of questions around ethnicity within pharmacy practice research	Denmark and United Kingdom	Discussion paper	N/A	All	All	Both	The paper provides a critical review of health services and social science research exploring race and ethnicity in pharmacy practice
2	2008	Kamal & Shuan	To identify how Iraqi customers experience encounters with pharmacies and pharmacists	Copenhagen Capital region, Denmark	Semistructured interviews	2008	Ethnic Kurds from Iraq	Adult population	9 participants (6 women and 3 men)	<ul style="list-style-type: none"> <li>- Iraqi customers and Danish pharmacists use and perceive pharmacy services differently and have different expectations;</li> <li>- All migrants cannot be lumped together – respect diversity</li> </ul>
3	2011	Mygind et al.	To explore how ethnic minorities at risk of vitamin D deficiency are constructed in Danish policy documents	Denmark	Policy document analysis	2009	Non-Western immigrant and ethnic minorities	All ages	Not applicable	A high disparity in the way ethnic minority groups are defined hinders the identification of causes leading to vitamin D deficiency
4	2011	Shaheen	To explore differences and similarities between MRPs and cognitive illness and medication perceptions between ethnic majority Danes and Pakistani patients with type 2 diabetes	Denmark	Semistructured interviews including medication reviews	2011	Pakistani and Danish patients with type 2 diabetes	53–79 years	5 women (2 Pakistani) and 2 men (1 Pakistani)	<ul style="list-style-type: none"> <li>- Interviews with Pakistani patients revealed how interpreters and/or family members constituted a larger part of the medication decision-making process than is the case among the Danish majority population;</li> <li>- There are more MRPs among ethnic majorities than among ethnic minorities (9.5 MRPs/ethnic majority patient vs 5 MRPs/ethnic minority patient)</li> </ul>
5	2013	Molin et al.	To explore the perceptions of disease etiology and the effect of one's own behaviour on health among polypharmacy patients	Denmark	Semistructured interviews and extended medication reviews	April–September 2008	Non-Western immigrant and ethnic minorities	Adult population (aged > 50 years)	17 women and 9 men	<ul style="list-style-type: none"> <li>- Latent and continued stress due to their immigrant status was often perceived as the cause of participants' diseases;</li> <li>- Participants felt that their own efforts had little impact on their health status</li> </ul>

TABLE 1. CHARACTERISTICS OF THE SELECTED QUALITATIVE STUDIES AND PROJECTS

No.	Year	Authors	Aim	Location	Study design	Data collection date	Ethnic and migrant groups	Age range	Sex	Key messages
6	2013	Mygind et al.	To explore patient perspectives on medicine use during Ramadan	Copenhagen Capital region, Denmark	Semistructured interviews and extended medication reviews	April–May 2010	Ethnic Pakistanis	Adult population (aged > 42 years)	5 women and 1 man	Decision-making on whether to fast during Ramadan rarely included health-care professionals. Instead, friends and relatives, especially those with the same type of disease were often considered
7	2014	Basiri	To explore similarities and differences in medicine use among ethnic Iranian adolescents living in Denmark and those living in Iran	Copenhagen Capital region, Denmark & Shiraz, Fars Province, Iran	Semistructured interviews	2014	Ethnic Iranians and native Iranians	Adolescents (aged 15–20 years)	14 adolescents (7 girls and 7 boys)	Ethnic Iranian adolescent girls living in Denmark reported using more analgesics to cope with stress than adolescent girls living in Iran
8	2015	Fernández de Casadevante et al.	To analyse the determinants of HPV uptake in Europe	Europe	Systematic review, 23 studies	2008–2014	Immigrant women populations residing in European countries	Adolescent and adult population (aged 12–44 years)	Women (unspecified)	Higher HPV uptake was associated with ethnic majority populations, higher socioeconomic status, regular cervical screening participation by the mother, and having received previous childhood vaccinations
9	2016	Hu & Cantarero-Arévalo	To examine the relationship between ethnic background and ADRs to asthma medications	Multicountry	Systematic review, 26 studies	1998–2014	Immigrant and ethnic populations included in RCTs	All ages	Men and women (unspecified)	Despite the higher prevalence of asthma among specific ethnic minority groups, few studies have disaggregated information by ethnic background, and reports of ADRs to asthma medications in different ethnic groups are rare
10	2016	Ramzan et al.	To explore perceptions, knowledge and attitudes regarding the use of medicinal plants among Pakistanis living in Copenhagen	Copenhagen, Denmark	Semistructured interviews and plant collection	June 2016–September 2016	Ethnic Pakistanis	Adult population (aged 30–80 years)	14 women and 2 men	Use of medicinal plants is common among ethnic Pakistanis living in Denmark
ADR: adverse drug reaction; HPV: human papillomavirus vaccine; MRP: medicine-related problem; RCT: randomized controlled trial.										



TABLE 2. CHARACTERISTICS OF THE SELECTED QUANTITATIVE STUDIES

No.	Year	Authors	Aim	Location	Study design	Data collection date	Ethnic and migrant groups	Age range	Sex	Key messages
1	2009	Hansen & Søndergaard	To examine optimal drug use among non-ethnic Danes, including consumption, attitudes and compliance	Denmark	Survey	2005–2006	Comparison between ethnic Danes and non-Western migrants	Adolescents, young adults and adult population	Both	<ul style="list-style-type: none"> <li>- A significantly smaller portion of non-ethnic Danes than Danes (31.6% vs 39.6%) regularly used medicines</li> <li>- 60% of non-Western immigrants, compared with 52% of ethnic Danes, stated that they had experienced MRPs</li> <li>- A larger proportion of immigrant women use over-the-counter medicines</li> </ul>
2	2013	Mygind et al.	To explore the challenges in serving immigrant customers at Danish community pharmacies	55 community pharmacies in 5 councils, Denmark	Questionnaire-based study	April 2009	Non-Western immigrant and ethnic minorities	All ages	85 women and 13 men	<ul style="list-style-type: none"> <li>- Pharmacists and pharmacist assistants assess their counselling to ethnic minority groups as suboptimal</li> <li>- Frequent use of underage children as interpreters</li> </ul>
3	2013	Cantarero-Arévalo et al.	To analyse whether there are inequalities in asthma treatment and, if so, whether this varies between household income groups	Denmark	Register-based study	2008	Immigrant and descendant children and adolescents	Children and adolescent population (aged 0–17 years)	1 092 886 children (51.2% boys)	<ul style="list-style-type: none"> <li>- Compared with ethnic Danes, immigrant children had the lowest OR for redeeming a prescription for asthma medication, both relief (OR: 0.37; 95% CI: 0.20–0.68) and preventive medications (OR: 0.37; 95% CI: 0.22–0.59)</li> <li>- Similar associations were found among descendant children (OR for relief treatment: 0.82; 95% CI: 0.79–0.89; OR for preventive treatment: 0.68 95% CI: 0.61–0.75). The pattern of the association remained after stratifying for household income</li> </ul>



TABLE 2. CHARACTERISTICS OF THE SELECTED QUANTITATIVE STUDIES

No.	Year	Authors	Aim	Location	Study design	Data collection date	Ethnic and migrant groups	Age range	Sex	Key messages
4	2014a	Cantarero-Arévalo et al.	To analyse whether ethnic differences in the use of antiasthmatic medication among children varies by place of residence	Copenhagen Capital Region, Denmark	Register-based study	2008	Immigrant and descendant children with Turkish, Iraqi and Lebanese backgrounds	Children and adolescent population (aged 0–17 years)	342 403 children (51.3% boys)	<ul style="list-style-type: none"> <li>- Children living in low-income places of residence had lower odds of being prescribed preventive antiasthmatics compared with children living in higher-income places of residence (OR: 0.87; 95% CI: 0.84–0.91)</li> </ul>
5	2014b	Cantarero-Arévalo et al.	To examine the association between immigrant background and medicine use for headaches	Denmark	Questionnaire-based study	2008	Non-Western immigrants and descendants	Children and adolescent population (aged 11, 13 and 15 years)	9514 pupils (4674 boys and 4540 girls)	<ul style="list-style-type: none"> <li>- Among adolescents in Denmark, the risk of medicine use for headache and stomach-ache was higher for immigrants and descendants than for ethnic Danes, with the exception of medicine use for headache among girls</li> </ul>
6	2014c	Cantarero-Arévalo et al.	To examine the role of feeling safe at school regarding the use of medicines for aches	Denmark	Questionnaire-based study	2008	Non-Western immigrants and descendants	Children and adolescent population (aged 11, 13 and 15 years)	9514 pupils (4674 boys and 4540 girls)	<ul style="list-style-type: none"> <li>- Self-reported medicine use for common health problems is high among adolescents with migrant backgrounds, particularly among first-generation immigrant girls</li> <li>- Feeling safe at school partially mitigated the association between migrants' background and adolescents' medicine use</li> </ul>

TABLE 2. CHARACTERISTICS OF THE SELECTED QUANTITATIVE STUDIES

No.	Year	Authors	Aim	Location	Study design	Data collection date	Ethnic and migrant groups	Age range	Sex	Key messages
7	2016	Cantarero-Arévalo et al.	To evaluate whether maternal country of birth accurately identifies adolescents with inappropriate antiasthmatic medication use	Skåne County, Sweden	Register-based cohort study	2005–2008	Ethnic minority children residing in Skåne	Adolescent population (aged 17 years) from 52 different countries	439 590 adolescents (gender unspecified)	<ul style="list-style-type: none"> <li>- Categorization by maternal country of birth is inaccurate for identifying the inappropriate use of antiasthmatic medication among Swedish adolescents, as within-group heterogeneity is very high</li> </ul>
8	2016	Fernández-Casadevante et al.	To examine ethnicity-related differences in the uptake of a temporary free-of-charge HPV catch-up programme and compare it with the previous self-payment system in place	Denmark	Register-based cohort study	August 2012 to December 2013	Ethnic minority women	Young adult female population	274 154 women	<ul style="list-style-type: none"> <li>- The free programme increased the vaccination uptake more among Danish women than among descendant or immigrant women</li> <li>- The likelihood of HPV programme initiation among immigrants was higher for immigrants living in Denmark for 16–20 years compared with those living in Denmark for 6–10 years</li> </ul>
9	2016	Hu et al.	To investigate ethnic differences in continuity of the use of maintenance medications for COPD	Copenhagen, Denmark	Register-based cohort study	2010	Non-Western immigrant ethnic background	Adult population	480 women and 649 men	<ul style="list-style-type: none"> <li>- Individuals with ethnic minority backgrounds terminated COPD medication use more often than ethnic Danes (HR: 1.40; 95% CI: 1.03–1.90; <math>P = 0.03</math>)</li> </ul>
CI: confidence interval; COPD: chronic obstructive pulmonary disease; HPV: human papillomavirus vaccine; HR: hazard ratio; MRP: medicine-related problem; OR: odds ratio.										

TABLE 3. CHARACTERISTICS OF THE SELECTED THEORY-BASED INTERVENTIONS STUDIES

No.	Year	Authors	Aim	Location	Study design	Data collection date	Ethnic and migrant groups	Age range	Sex	Key messages & conclusion
1	2009	Gregersen	To investigate how patient education for non-Danish-speaking persons with type 2 diabetes contributes to helping patients have the best possible knowledge and the best possible tools to manage their disease	Copenhagen Health Center at Nørrebro, Denmark	Action-research design (including documentary method, observations and interviews)	2009	Pakistani and Danish type 2 diabetes patients	All ages	21 (former) patients (9 ethnic minority patients – 5 female and 4 male) and 12 ethnic Danes + 2 health-care practitioners	<ul style="list-style-type: none"> <li>- Individualize the teaching of non-Danish-speaking patients with type 2 diabetes by involving their perspectives on medicines and health inpatient education programmes</li> </ul>
2	2009	Haugbølle et al.	To reduce the number of MRPs through the implementation of medication review	Denmark	Commentary on the research-based intervention	2009	Non-Western immigrant and ethnic minorities	Adult population (aged >50 years)	23 patients (17 women and 6 men)	<ul style="list-style-type: none"> <li>- A collaborative approach that includes pharmacists, family doctors and patients helps reduce MRPs</li> <li>- More frequent monitoring meetings with patients enhances patient satisfaction, trust in health-care professionals and motivation to comply with medicine regimens</li> </ul>
3	2014d	Cantareiro-Arévalo et al.	To reduce MRPs among Arabic-speaking ethnic minorities	Copenhagen, Denmark	Research-based intervention	2012	Non-Western immigrants	Adult population (aged 21–60 years)	30 participants (27 women and 3 men)	<ul style="list-style-type: none"> <li>- Participants expressed frustration due to communication problems with Danish doctors</li> <li>- The programme helped bridge the gap between participants and doctors</li> <li>- The commonality of the culture, language and gender shared by the researcher, pharmacist and participants enhanced the success of the programme</li> </ul>

TABLE 3. CHARACTERISTICS OF THE SELECTED THEORY-BASED INTERVENTIONS STUDIES										
No.	Year	Authors	Aim	Location	Study design	Data collection date	Ethnic and migrant groups	Age range	Sex	Key messages & conclusion
4	2015	Dam et al.	To improve medicine adherence, health status and work ability through individualized pharmacist counselling on safe and effective use of medicines	4 Danish municipalities	Research-based before and after intervention	October 2011 to December 2013	Non-Western ethnic minorities receiving unemployment or sickness benefits	Adult population (aged 25–63 years)	82 patients (64 women and 18 men)	- Individualized interventions delivered by pharmacists with a focus on safe and effective medical treatments improved self-reported adherence and compliance with the regimen for approximately half of the patients
5	2016	Mygind et al.	To involve pharmacists as professional peers in an extended medication review intervention	Denmark	Research-based intervention	Autumn 2015	Non-Western immigrant ethnic minorities	All ages	12 pharmacists (male and female)	- Involving health-care staff with ethnic minority backgrounds as professional peers in encounters with ethnic minorities has potential for the adaptation of services to ethnically diverse populations, thus improving access to and quality of care
MRP: medicine-related problem.										

TABLE 4. KEY SUCCESSFUL PRACTICES AND INNOVATIVE SOLUTIONS LEARNT FROM 10 SELECTED EMPIRICAL AND INTERVENTION STUDIES

Focus of study	Bissell et al. (2003)	Kamal & Shuan (2008)	Gregersen (2009)	Haugbølle et al. (2009)	Shaheen (2011)	Mygind et al. (2013)	Molin et al. (2013)	Cantarero-Arévalo et al. (2014d)	Dam et al. (2015)	Mygind et al. (2016)
<b>Design</b>										
Involve patient's perspective on medicines	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Recognize patient's values	✓							✓		
Integrate patient's expectations in pharmacy counselling		✓						✓	✓	✓
Distinguish between different ethnic backgrounds and include characteristics other than country of birth when grouping patients, such as religion, language or regions within the home country	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Include interventions in which family members are involved or even interview relatives during medicine reviews				✓	✓					
Design programmes in which doctors take part from the start				✓		✓				
Work with pharmacist with the same ethnic background as the user(s)/patient(s)		✓			✓		✓	✓		
Take into account the psychological stress due to the migration and integration processes	✓						✓			
<b>Implementation</b>										
Recruit through channels other than the pharmacy counter (as is problematic due to mistrust in the use of the information): use social networks and/or language schools				✓	✓		✓	✓	✓	
Train health-care professionals in cross-cultural understanding				✓		✓			✓	✓
Use professional interpreters or bilingual pharmacists to avoid frequent use of underage children as interpreters						✓				
Individualize teaching programmes to the specific needs of ethnic minorities			✓	✓	✓	✓	✓	✓	✓	✓
A collaborative approach including pharmacists, family doctors and patients (pay special attention to Ramadan for Muslim patients)					✓	✓			✓	
Reiterative interviews, in which mutual knowledge develops, are helpful				✓				✓		
<b>Follow-up</b>										
Frequent monitoring meetings to enhance patient's satisfaction and trust in health-care professionals and motivation to comply with medicine regimens				✓						
Enhance self-efficacy based on own cultural values							✓			

## KEY MESSAGES ON EQUITY

Despite the present Danish universal health-care system, inequalities in access to and use of medicines have been detected. These are mainly due to non-structural barriers to health care, including issues related to lack of language skills and different expectations between the health-care professional (doctors and pharmacists) and patients, resulting in the encounter creating frustration and therefore affecting the level of trust between the two parties (4, 5, 19, 21, 23, 26, 27, 36–38). This mistrust hinders the counselling process and affects the way ethnic and migrant populations use medicines (35). Socioeconomic and sociodemographic characteristics also have an impact on equity between the majority and migrant populations (23, 24, 28–35); these characteristics include length of stay in the host country, ancestry (i.e. either first generation or descendant), country of origin, educational background, income level, gender and age (children, young adults and adult populations). These differences have been found in accessing over-the-counter medication (30, 31), vaccination programmes (23, 33) and treatment for chronic conditions (28, 34). The impacts of discrimination and daily psychological stressors have been identified by migrant populations as causes affecting their health and their use of medications (5, 22), among both young (22) and adult populations (5).

Crucial issues arise when migrants travel back and forth from the country of origin to the host country. Seasonal travelling (2–4-month visits to the home country each year are not unusual) poses challenges for maintaining continuity of treatment, and this is especially relevant for chronic patients and those on polypharmacy (5). Finally, using both imported medicines and traditional remedies, and sharing prescribed medication can potentially increase the risk of side-effects due to interactions and MRPs (25).

## SUCCESSFUL PRACTICES AND INNOVATIVE SOLUTIONS

Among the key components of the success of theory-based interventions conducted by SCP-KU were building trust between the pharmacist and the user/patient, and involving ethnic minorities in all phases of the intervention (design, implementation and evaluation) (35–39). The development of an ethnically sensitive culture among pharmacists based on openness, curiosity and respect facilitated

a cross-cultural understanding that appeared to be the main component for the success of the intervention projects. When possible, it is important not only to cooperate individually with the patient but also to involve the family, friends and close social network, especially when there is a need to change a specific behaviour related to either medicine use or lifestyle habits (38, 39). Moreover, a collaborative approach that includes pharmacists, family doctors and patients contributes to reducing MRPs and improves adherence and compliance (35–39). For the Muslim population, it was found that special attention should be given during Ramadan (4). Ethnic sensitivity during Ramadan and the will to find ways of accommodating medicine regimens appeared to increase patient satisfaction and maintain stable compliance, especially among chronic patients.

## OTHER LESSONS LEARNT

Using different methodological approaches, Bissell et al., Mygind et al. and Cantarero-Arévalo et al. showed the limitations and pitfalls faced when operationalizing the terms ethnicity or migrant (19, 20, 28), and highlighted the importance of exerting prudence when classifying ethnic groups. The way ethnic groups and migrants are defined and categorized has implications for the way we identify causes of diseases and health behaviours. To actually identify those groups in need, a sensitive and simultaneously flexible definition that captures the subtleties of belonging to a specific ethnic or migrant group is needed.

## DISCUSSION

This review provides insight into the work conducted by the research group at SCP-KU. The 24 empirical and theory-based intervention studies included show, first, that in Denmark there are inequities in access to and use of medicines for infectious diseases, chronic conditions and minor ailments across different age groups, in both men and women and in different ethnic minority groups. Second, theory-based interventions that involve ethnic minorities as patients and researchers in their design, implementation and evaluation contribute to improving compliance with medicine regimens and reducing MRPs (18). This effect is further enhanced by involving relatives and friends and the larger social

network of the patient, and by engaging different health-care professionals, especially the family doctor.

The impact of the SCP-KU studies and interventions have not been evaluated, but it is obvious that this body of work, combined with on-the-floor, day-to-day work experiences of pharmacists and allied professionals in community pharmacies and hospitals, has resulted in an increase in awareness among health-care personnel in Denmark. Today, the ethnically sensitive services provided by pharmacists and pharmacy personnel have improved the quality of care. This development can be attributed to two clear demographic shifts: first, to the increase in the number of non-Western migrants; and second, to how this development over time resulted in a significant increase in people from ethnic minorities becoming students at the school of pharmacy. Another major shift is attributed to the SCP-KU tradition of research-based teaching. This tradition has fostered the active participation and empowerment of pharmacy students by including them in all stages of research in this area. Ultimately, this approach has led to students from ethnic minorities initiating and carrying out their own studies.

The response to the recent influx of immigrants and refugees to Europe creates challenges for many countries who find themselves unprepared when they suddenly have to provide pharmaceutical services for a group of patients and medicine users who not only do not speak the same language but also do not understand the culture and procedures of the health-care services of the host country. We therefore argue that the relevance of this article lies in the fact that in Denmark these challenges are part of the road to integration and are not regarded as a permanent state of affairs. Seeing and understanding this progression, in our opinion, attacks two common pitfalls in research, teaching and interventions. The first pitfall is that the term ethnicity does not have a single definition: several of the studies included here note that even migrants from the same country or those who share a common religion and/or language are very different and have different needs. A second pitfall is placing a special focus on ethnicity as a problem to be addressed in either research or when confronted by students of non-Western origin. Caution is advised to avoid stigmatizing migrants (both in the population and as students of pharmacy).

There are a few limitations of this body of work. First, one might question the relevance of these studies for other countries, as this research was carried out in Denmark, a small country with a relatively short history of and limited experience with non-Western ethnic minorities. Indeed, the SCP-KU research group has had little contact with, and therefore no published work on, asylum seekers living in Danish refugee camps. Thus, the current results can be extrapolated only with difficulty because the level of migration and influx of refugees in Denmark are low compared with other European countries, and with countries such as Turkey and Jordan. The strengths of our paper lie in the fact that SCP-KU has worked with ethnic minorities on medicine use and on a wide range of different issues related to these population groups for almost two decades: from a user's perspective, both qualitatively and quantitatively, and using different yet relevant theories. These facts, we believe, increase the validity of our study.

## IMPLICATIONS FOR PRACTICE

For academic institutions, in particular, we suggest making use of the pharmacy internship period and encouraging students to develop research projects aimed at addressing inequalities in medicine use. We also strongly recommend inviting students from ethnic minorities to counsel patients with whom they share ethnic backgrounds. For public bodies active at the local or regional levels, we encourage the development of an outreach programme aimed at providing basic orientation to newly arrived migrants about what types of services are available, what can be expected when visiting a community pharmacy and the specificities of the health-care services of the host country with the object of reducing misunderstanding and frustration. In the case of pharmacy services, this is especially crucial with regard to which medicines are to be purchased over the counter. For clinical pharmacy reviews, we recommend conducting medicine reviews by pharmacists with the same ethnic background as the patients to further reduce MRPs and improve compliance.

## RESEARCH PRIORITIES

A first priority of research is to examine ethnic inequalities in access to and use of medicines across the WHO European Region by conducting a multicountry survey. This approach will eventually allow assessment of the effect of different types of



health-care systems on the quality of care for ethnic minorities. A second priority of research is to address the impact of different migrant statuses (refugee, asylum seeker, and undocumented, labour and circulatory migrant) on access to and use of medicines, as well as the impact of various migrant statuses on compliance with medicine regimens among chronic patients. Finally, the third research priority is to gain an in-depth understanding of self-medication, the use of traditional medicines and other medicine-use behaviours among specific ethnic minority groups across several European countries.

## CONCLUSION

Ethnically sensitive pharmacy-related services ease the counselling process on the use of medicines and ultimately contribute to a reduction in MRPs. Components of successful interventions include the involvement of ethnic minorities in all phases of the intervention. Currently, academic institutions may use their teaching sessions as an entry point to raise awareness among future health-care professionals of the importance of acknowledging and recognizing the need for an ethnically sensitive approach. In addition to the need for applying the user's perspective in research and interventions, the use of theory paves the way for more sound interventions.

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## REFERENCES

1. Qato DM, Wilder J, Schumm LP, Gillet V, Alexander GC. Changes in prescription and over-the-counter medication and dietary supplement use among older adults in the United States, 2005 vs 2011. *JAMA Intern Med.* 2016;176:473–82. doi: 10.1001/jamainternmed.2015.8581.
2. Norredam M. Migration and health: exploring the role of migrant status through register-based studies. *Dan Med J.* 2015;62:B5068.
3. Norredam M, Nielsen SS, Krasnik A. Migrants' utilization of somatic healthcare services in Europe--a systematic review. *Eur J Public Health.* 2010;20(5):555–63.
4. Mygind A, Kristiansen M, Wittrup I, Norgaard LS. Patient perspectives on type 2 diabetes and medicine use during Ramadan among Pakistanis in Denmark. *Int J Clin Pharm.* 2013;35:281–8. doi: 10.1007/s11096-012-9716-1.
5. Molin KR, Mygind A, Norgaard LS. Perceptions of disease aetiology and the effect of own behaviour on health among poly-pharmacy patients with non-Western backgrounds in Denmark. *Int J Pharm Pract.* 2013;21:386–92. doi: 10.1111/ijpp.12023.
6. Hudson JL, Miller GE, Kirby JB. Explaining racial and ethnic differences in children's use of stimulant medications. *Med Care.* 2007;45:1068–75. doi: 10.1097/MLR.0b013e31806728fa.
7. Pieroni A, Muenz H, Akbulut M, Baser KH, Durmuskahya C. Traditional phytotherapy and trans-cultural pharmacy among Turkish migrants living in Cologne, Germany. *J Ethnopharmacol.* 2005;102(1):69–88.
8. Pieroni A, Sheikh QZ, Ali W, Torry B. Traditional medicines used by Pakistani migrants from Mirpur living in Bradford, Northern England. *Complement Ther Med.* 2008;16(2):81–6.
9. Boserup RA. Denmark's harsh new immigration law will end badly for everyone. *The World Post.* 2 February 2016 ([http://www.huffingtonpost.com/rasmus-alenius-boserup/denmark-immigration-law\\_b\\_9112148.html](http://www.huffingtonpost.com/rasmus-alenius-boserup/denmark-immigration-law_b_9112148.html), accessed 8 December 2016).
10. Razum O, Stronks K. The health of migrants and ethnic minorities in Europe: where do we go from here? *Eur J Public Health.* 2014;24:701–2. doi: 10.1093/eurpub/cku071.
11. Stepping up action on refugee and migrant health: towards a WHO European framework for collaborative action. Copenhagen: WHO Regional Office for Europe; 2015 ([http://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0008/298196/Stepping-up-action-on-refugee-migrant-health.pdf](http://www.euro.who.int/__data/assets/pdf_file/0008/298196/Stepping-up-action-on-refugee-migrant-health.pdf), accessed 8 December 2016).

12. Larsen BO, Hansen EH. The active medicine user. *Scand J Prim Health Care*. 1985;3:55–9.
13. Bissell P, Traulsen J. *Sociology and pharmacy practice*. London: Pharmaceutical Press; 2005.
14. Bjornsdottir I, Almarsdottir AB, Traulsen JM. The lay public's explicit and implicit definitions of drugs. *Res Social Adm Pharm*. 2009;5:40–50. doi: 10.1016/j.sapharm.2008.04.003.
15. Haugbølle LS, Sorensen EW, Gundersen B, Petersen KH, Lorentzen L. Basing pharmacy counselling on the perspective of the angina pectoris patient. *Pharm World Sci*. 2002;24:71–8.
16. Moldrup C. Medical technology assessment of the ethical, social, and legal implications of pharmacogenomics. A research proposal for an Internet citizen jury. *Int J Technol Assess Health Care*. 2002;18:728–32.
17. Krasnik A, Vallgård S, Christiansen T, Høyer KI. *Health services and health policy*. Copenhagen: Munksgaard; 2008.
18. Bissell P, Traulsen J, Haugbølle LS. Researching “race”, ethnicity and health: a critical review. *Int J Pharm Pract*. 2003;11:183–97.
19. Kamal A, Shuan A. *The use of pharmacy services by Iraqi Kurds living in Denmark [thesis]*. Copenhagen: Copenhagen University; 2008.
20. Mygind A, Traulsen JM, Norgaard LS, Bissell P. The ambiguity of ethnicity as risk factor of vitamin D deficiency—a case study of Danish vitamin D policy documents. *Health Policy*. 2011;102:56–63. doi: 10.1016/j.healthpol.2011.05.012.
21. Shaheen F. *Medicine review for ethnic Danish and Pakistani patients with type 2 diabetes – a pilot of study about comparison of drug related problems, cognitive illness and medication representation [thesis]*. Copenhagen: Copenhagen University; 2011.
22. Basiri A. *Exploring similarities and differences in adolescents' medicine use behaviours: a comparative qualitative study between adolescents living in Iran and adolescent Iranian immigrants living in Denmark [thesis]*. Copenhagen: Copenhagen University; 2014.
23. Fernández de Casadevante V, Gil Cuesta J, Cantarero-Arévalo L. Determinants in the uptake of the human papillomavirus vaccine: a systematic review based on European studies. *Front Oncol*. 2015;5:141. doi: 10.3389/fonc.2015.00141.
24. Hu Y, Cantarero-Arévalo L. Ethnic differences in adverse drug reactions to asthma medications: a systematic review. *J Asthma*. 2016;53:69–75. doi: 10.3109/02770903.2015.1058395.
25. Ramzan S, Janger A, Soelberg J, Cantarero-Arévalo L. Traditional medicine among people of Pakistani descent in the Capital region of Copenhagen. *J Ethnopharmacol*. 2016 [Epub ahead of print, PMID: 27939419]. doi: 10.1016/j.jep.2016.11.048.
26. Hasen EH, Sondergaard B. *Optimal drug use among non-ethnic Danes: consumption, attitudes and compliance*. Copenhagen: Copenhagen University; 2009.
27. Mygind A, Espersen S, Norgaard LS, Traulsen JM. Encounters with immigrant customers: perspectives of Danish community pharmacy staff on challenges and solutions. *Int J Pharm Pract*. 2013;21:139–50. doi: 10.1111/j.2042-7174.2012.00237.x.
28. Cantarero-Arévalo L, Holstein BE, Andersen A, Kaae S, Norredam M, Hansen EH. Inequalities in asthma treatment among children by country of birth and ancestry: a nationwide study in Denmark. *J Epidemiol Community Health*. 2013;67:912–17. doi: 10.1136/jech-2012-202135.
29. Cantarero-Arévalo L, Ersboll AK, Holstein BE, Andersen A, Kaae S, Hansen EH. Ethnic and migrant differences in the use of anti-asthmatic medication for children: the effect of place of residence. *Pharmacoepidemiol Drug Saf*. 2014a;23:95–104. doi: 10.1002/pds.3541.
30. Cantarero-Arévalo L, Holstein BE, Andersen A, Kristiansen M, Hansen EH. Immigrant background and medicine use for aches: national representative study of adolescents. *J Pharm Policy Pract*. 2014b;7:1. doi: 10.1186/2052-3211-7-1.
31. Cantarero-Arévalo L, Andersen A, Holstein BE, Hansen EH. Migrant differences in adolescents' medicine use for common health problems: a national representative survey. *Glob J Epidemiol Public Health*. 2014c;1(1):24–34.
32. Cantarero-Arévalo L, Perez Vicente R, Juarez SP, Merlo J. Ethnic differences in asthma treatment among Swedish adolescents: a multilevel analysis of individual heterogeneity. *Scand J Public Health*. 2016;44:184–94. doi: 10.1177/1403494815614749.
33. Fernández de Casadevante V, Cantarero-Arévalo L, Cuesta JG, Valentiner-Branth P. Ethnic background and human papillomavirus vaccine uptake in Denmark: a countrywide retrospective cohort study including 274,154 women aged 19–28 years. *Papillomavirus Research*. 2016;2:78–84.
34. Hu Y, Jakobsen R, Frølich A, Wallach-Kildemoes H, Cantarero-Arévalo L. Ethnic inequalities in COPD outcomes: a register-based study in Copenhagen, Denmark. *J Racial Ethn Health Disparities*. 2016 [Epub ahead of print, PMID: 27981500] doi: 10.1007/s40615-016-0321-1.
35. Gregersen HH. *Evaluation of a patient education programme to ethnic minorities type 2 diabetes patients at Nørrebro Health center: an action research project with focus on medicine understanding, management and behaviour*. Copenhagen: Copenhagen University; 2009.

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36. Haugbølle L, Sondergaard B, Sørensen EW, Traulsen JM, El-Souri M, Mygind A. Optimal drug use among non-ethnic Danes: implementation of medication review. Copenhagen: Copenhagen University; 2009.
  37. Cantarero- Arévalo L, Kassem D, Traulsen JM. A culturally competent education program to increase understanding about medicines among ethnic minorities. *Int J Clin Pharm*. 2014d;36:922–32. doi: 10.1007/s11096-014-0009-8.
  38. Dam P, El-Souri M, Herborg H, Nørgaard LS, Rossing C, Sodemann M, et al. Safe and effective use of medicines for ethnic minorities – a pharmacist-delivered counseling program that improves adherence. *J Pharma Care Health Sys*. 2015;2:128.
  39. Mygind A, Nørgaard LS, Traulsen JM, El-Souri M, Kristiansen M. Realising the potential of peer-status among healthcare professionals: lessons learned from a Danish community-pharmacy intervention for ethnic minorities. *Scand J Public Health*. 2016 (in press).
  40. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Ann Intern Med*. 2009;151(4):264–9.